

Human Health

- **RAO 1 – Sediments:** Reduce cancer risk and noncancer hazards to people from incidental ingestion of and dermal contact with contaminated sediments and riverbank soils by reducing the concentrations of COCs in sediments and riverbank soils at the site to the proposed remediation goals listed in **Table 2.2-1**; that are acceptable for subsistence, occupational, recreational, and ceremonial uses.
- **RAO 2 – Biota:** Reduce cancer risk and noncancer hazards ~~for~~to people eating contaminated fish and shellfish, and infants exposed being breastfed by mothers who consume contaminated fish from Portland Harbor by reducing the concentrations of COCs in sediments, riverbank soils, surface water, and biota at the site to the proposed remediation goals listed in **Table 2.2-1**.
- **RAO 3 – Surface Water:** Reduce cancer risk and noncancer hazards to people from direct contact (ingestion, inhalation, and dermal contact) with ~~contaminated~~ contaminants in surface water, and via consumption of contaminated fish and shellfish, by reducing the concentrations of COCs in surface water at the site to the proposed remediation goals listed in **Table 2.2-1**. These goals are protective of use of the Willamette River as a potential drinking water source, as well as for human consumption of fish and shellfish caught in the Willamette River.
- **RAO 4 – Groundwater:** Reduce migration of contaminants from groundwater to sediment and surface water by reducing the concentrations of COCs in pore water at the site to the proposed remediation goals to levels that are protective of human health in sediments, surface water, and biota (MCLs and AWQC). PRGs for this RAO will be measured in the pore water, and are listed in Table 2.2-1.

Commented [KC1]: General note: while “acceptable risks” are not mentioned in the RAOs, they are discussed throughout Section 2 (e.g., 10-6 or HQ of 1).

Commented [KC2]: Concentrations/goals that are “acceptable” to whom? Different than “acceptable risk levels” as defined by EPA. May be more objective to state “protective of...uses” (because PRGs are supposed to protect people in these scenarios based on a defined risk/hazard level).

Commented [KC3]: To be consistent with other RAOs (use “contaminated” qualifier)

Commented [KC4]: All human receptors mentioned in these RAOs are assumed to be exposed - if said explicitly, do so for every human receptor (not just infants)

Commented [KC5]: Does “from Portland Harbor” imply resident fish only? Does that also apply to the people eating fish (earlier in sentence)?

Commented [KC6]: The connection to fish & shellfish is missing, although one might surmise bioaccumulation

Commented [KC7]: Is there a need to note uses here, like in other RAOs (e.g., based on subsistence and recreational fishing)?

Commented [KC8]: PRGs are referred to generically in the other RAOs; why introduce specific screening levels here?

Ecological

- **RAO 5 – Sediments:** Reduce risk to ecological receptors from ingestion of and direct contact with contaminated sediments and riverbank soils by reducing the concentrations of COCs in sediments and riverbank soils at the site to the proposed remediation goals listed in **Table 2.2-1**.
- **RAO 6 – Biota (Prey):** Reduce risks to ecological receptors that consume contaminated prey by reducing the concentrations of COCs in sediments and biota at the site to the proposed remediation goals listed in **Table 2.2-1**.
- **RAO 7 – Surface Water:** Reduce risks to ecological receptors from ingestion of and direct contact with contaminants in surface water by reducing the concentrations of COCs in surface water at the site to the proposed remediation goals listed in **Table 2.2-1**.
- **RAO 8 – Groundwater:** Reduce migration of contaminants from groundwater to sediment and surface water by reducing the concentrations of COCs in pore water at the site to the proposed remediation goals to levels that are protective of ecological receptors in sediment, surface water, and biota (MCLs and AWQC). PRGs for this RAO will be measured in the pore water, and are listed in Table 2.2-1.